User Manual

Pixy®

Lightning detector

INGESCO®

LIGHTNING SOLUTIONS

Contents

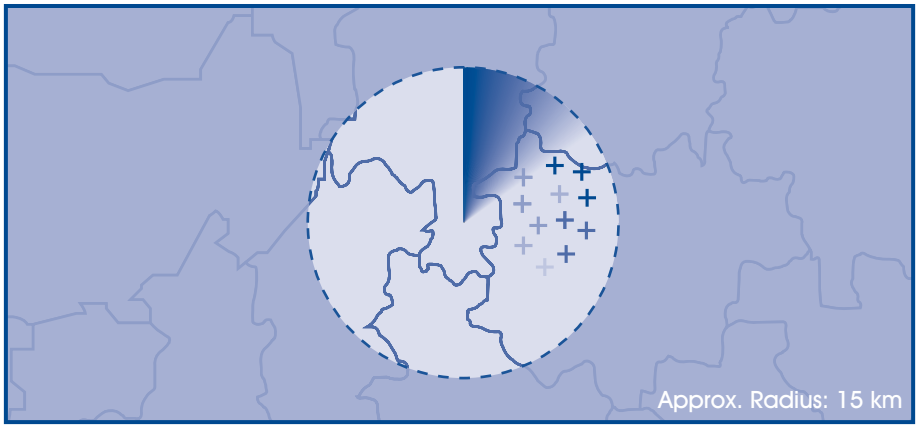
1.- Preface _ 02
2.- Introduction _ 02
3.- Safety Warnings _ 03
4.- Components _ 03
5.- Installation _ 05
5.1.- Receiver installation _ 05
5.2.- Pixy® module installation _ 06
6.- Operation _ 07
6.1.- Test Button _ 07
6.2.- Operation LEDs _ 07
6.3.- Audio alarm signal _ 07
6.4.- Relay activation _ 08
6.5.- Relay connection _ 08
6.6.- Connection to Previstorm® _ 09
6.7.- Connecting various secondary modules _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ 09
6.8.- PC Connection _ 10
7.- Software _ 10
7.1.- Software installation _ 10
7.2.- Software use _ 12
7.2.1.- Program menus _ 13
8.- Troubleshooting _ 14
9.- Technical characteristics _ 15

1. Preface

First of all, thanks for choosing our **Pixy**®. This product is the result of our broad experience in the research of lightning phenomena, and the development of preventative and protective systems. In 1973 Ingesco embarked on the journey that has allowed us to provide our clients with integral lightning protection.

2. Introduction

Pixy® is a cloud to earth atmospheric discharge detector for lightning detection and prevention systems. **Pixy**® detects atmospheric discharges within an approximate 15 km radius which allows the detection of approaching storms and the activation of protection and alarm systems.



You should not wait for a signal from Pixy® to take preventative or protective actions. If the climatic conditions are considered dangerous to your facilities or personnel and **Pixy**® has not given any alert signal, do not hesitate to take the predetermined actions electric risk.

Please read this manual carefully before placing this product in service and if you have any doubts, please contact your distributor.

3. Safety Warnings

- Do not damage the power cable, no place heavy objects on the equipment.
- Treat the equipment with care. Avoid knocks and vibrations.
- Before moving the equipment, disconnect the power cable.
- If noises, vibrations or abnormal odors are detected coming from the equipment, immediately disconnect the power cable. Contact your official distributor.
- Do not handle the equipment with wet or moist hands in order to avoid the risk of electric shock.
- Always use genuine cables and parts.

4 . Components

Fig. A (Antenna)

Fig. B (Pixy® Module)

Fig. C (Antenna cable)

Fig. D (Serial cable)

Fig. E (Power supply)

Fig. F (Instruction manual)

Fig. G (Installation CD)

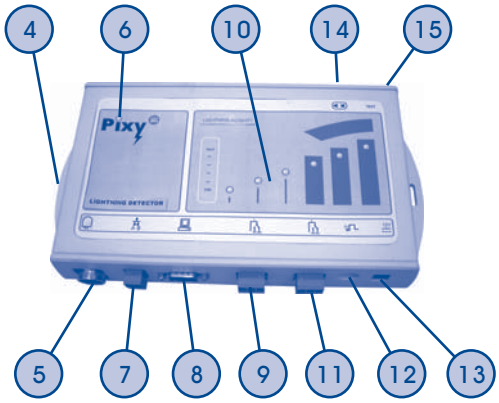
Ensure that all of the articles are included in the package.

Fig. A (Antenna)

1 - Allen screw.
2 - Antenna cable connector.
3 - Protector radome.

Fig. B (Pixy® Module)

4 - Fastening holds 4
5 - Antenna Connector DIN 5 via Stereo
6 - Operation LED
7 - Primary/secondary connector
8 - PC serial connector
9 - Output relay 1(10 sec.)
10 - Indicating LEDs
11 - Output relay 2 (End of storm)
12 - Previstorm Connector
13 - 12V power connector
14 - Audio switch
15 - Test button



5 . Installation

The entire installation of the **Pixy**® consists of the placement of the antenna, the fastening of the **Pixy**® module, and the different connection options that are available on the equipment (PC, secondary modules, relays...)

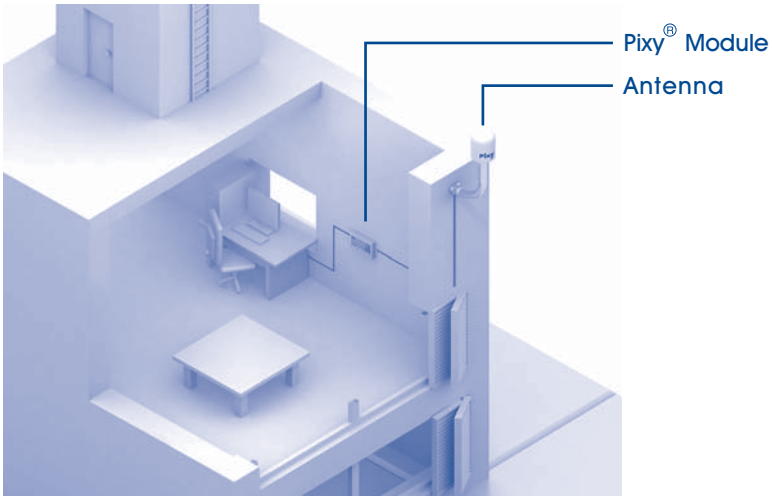
The following explains the installation process in more detail.

5.1 Receiver installation

Install the antenna outside, in an area which is clear of obstructions in all directions.

The antenna does not need to be installed in the highest place in order to detect lightning signals as it functions as detection and not attraction.

The antenna should be fastened to a cylindrical mast with a 50mm exterior diameter. This should be selected according to the implementation of the capture device, that is, whether on a base plate or with a separation arm.



Do not install the antenna in areas that are susceptible to atmospheric discharges or on structures which are classic targets for discharges; whether direct or indirect (TV antennas, telephone lines, tall trees, power lines.)

To avoid false alarms avoid installing the antenna near:

- Large metallic masses
- Televisions or monitors
- Fluorescent lights
- Electricity generators, lifts, air conditioning units.
- Spark sources (Solderers, Electric laboratories,...)

5.2 Pixy® module installation

The **Pixy®** module should be installed indoors in an easily accessible area with a clear view of the light indicators. This module comes prepared to be installed vertically or horizontally whether on a wall or flat service. ***Fig. H*** shows the mounting holes.

* Easy installation with m-6 metric screwdriver.

Fig. H

It is recommended to use an uninterruptible power supply (UPS) to ensure continued service in the event of a power failure. As an example, a 500Va UPS with a capacity of 7A/h provides almost 2 days of autonomous power.

6. Operation

Pixy® is a system which detects electro-atmospheric discharges within a radius of 15 km. The LEDs light to indicate electrical activity in real-time. All LEDs on indicates the maximum electrical storm risk and the consequent activation of the relays of the **Pixy**® module. As the electrical risk gradually diminishes, the LEDs sequentially switch off.

6.1 Test Button

The test button (Fig,B n_15) is used to check the proper operation of the **Pixy**® module. Pressing this button activates all of the LEDs as well as the audio signals. Consecutively, they will each turn off at intervals of 2 seconds. In reference to signal activation, pressing the Test button implies that Relay 1 will remain active for 10 seconds and Relay 2 will be active until all LEDs are unlit. The Previstorm signal will give a 5V signal and a serial test signal will be sent to the PC.

6.2 Operation LEDs

This LED indicates the unit is operating. A continuous blinking signifies proper operation. A non-blinking light or no light at all signifies incorrect power.

6.3 Audio alarm signal

When electric activity is detected, an intermittent audio signal is emitted for 10 seconds. This can be suspended by turning the audio signal switch to OFF. (fig B,n° 14)

6.4 Relay activation

The equipment is designed with 2 power-free output connections to interact with external processes such as audio-luminous alarms, power generators, UPS, GSM-GPRS modems etc.

The purpose of these contacts is to automate any type of process or preventative measure in the event of lightning strikes or storm risks which need a digital warning signal.

The **Pixy**® module provides two output relays:

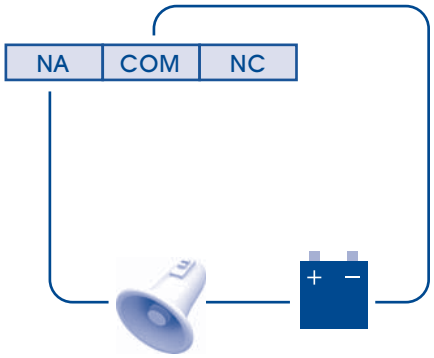
Relay 1 (Fig B n° 9) is activated for 10 seconds at the beginning of every storm.

Relay 2 or end of storm (Fig B n_11) is activated in the presence of electro-atmospheric discharges and does not deactivated until the risk of electric activity is terminated and the LEDs are unlit.

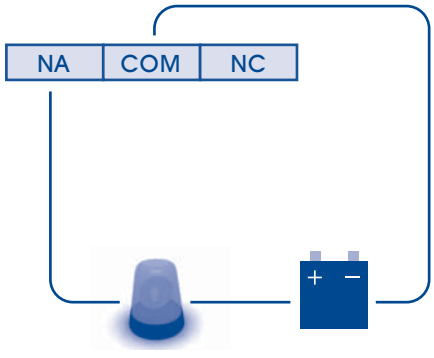
6.5 Relay connection

The recommended connection diagram and the contact status are described below:

RELAY 1 (10 sec.)



RELAY 2 (End of storm)



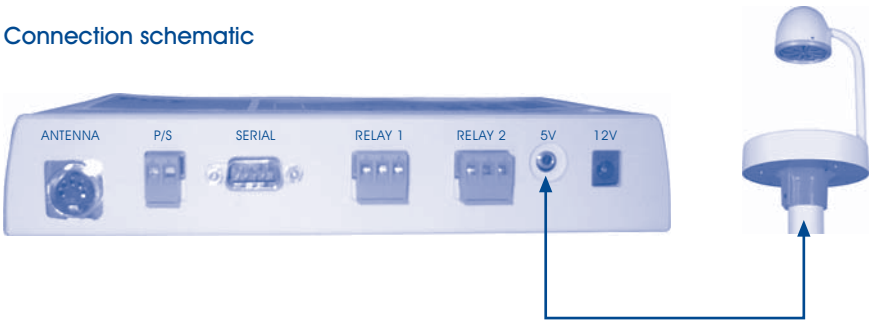
The relays are power-free.
Vmax= 250V, Imax = 5A
* For your safety it is recommended to not use voltages higher than 48V in your applications.

6.6 Connection to **Previstorm**®

The **Pixy**® module is designed to send a lightning detection signal to the **Previstorm**® storm detector system. The combination of both sensors (one for the electromagnetic field and the other for the electrostatic field) allows the **Previstorm**® to confirm the lightning strike by this signal which, along with the continued real-time measurement of the electrostatic field system, is capable of providing highly reliable lightning detection and storm risk prevention.

The signal provides a 5 Volt signal for .1 a second each time the **Pixy**® module detects lightning.

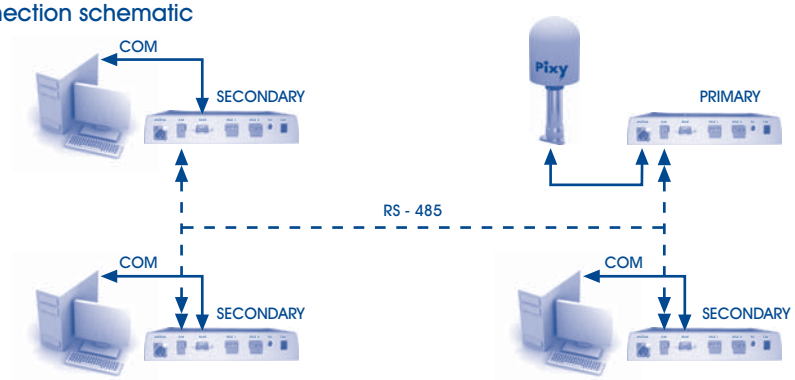
Connection schematic



6.7 Connecting various secondary modules

The **Pixy**® module permits optional primary / secondary connection. By means of connector P/S and 485 serial cable the primary module can signal another secondary module allowing this one to monitor and activate of electronic output in another physical space. The maximum recommended distance between modules for this type of connection is 500 meters.

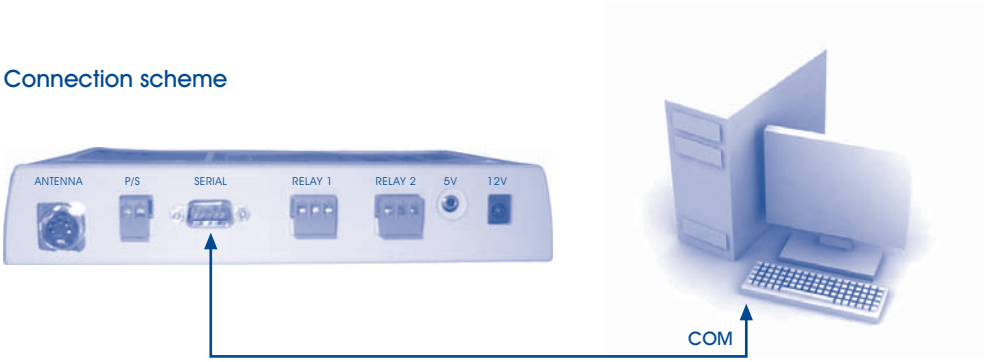
Connection schematic



6.8 PC connection

The **Pixy**® module permits monitoring and history logging by way of a computer. A DB9 serial cable is used to connect the **Pixy**® modules to the PC.

Connection scheme



7. Software

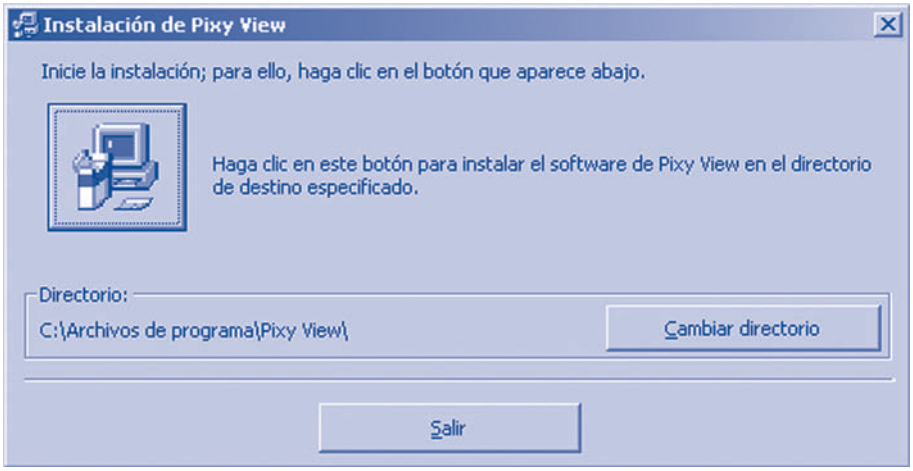
The **Pixy**® module can be connected PC. With this connection and the software provided, the current status of the equipment can be monitored. Additionally, all incidents are automatically saved to the log file where all of these instances are recorded.

7.1 Software installation

1. Insert the CD in the computer.

2. If the program does not start automatically, go to the My PC icon and select the CD unit and double click on the **Pixy**® icon.

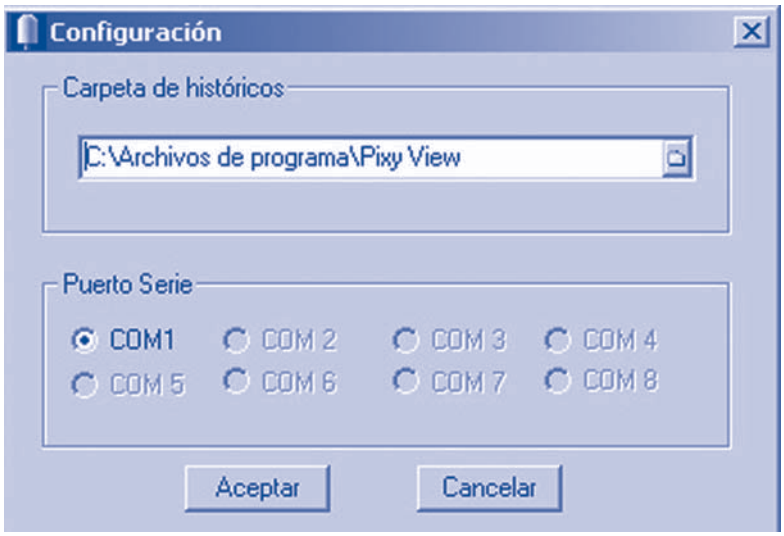
3. Select the destination folder where the program is to be installed. By default, it is installed in C: Pixy View program documents. If you would like to change the location, press the change directory button and choose the desired location.


Instalación de Pixy View
Inicie la instalación; para ello, haga clic en el botón que aparece abajo.
Haga clic en este botón para instalar el software de Pixy View en el directorio de destino especificado.
Directorio:
C:\Archivos de programa\Pixy View\
Cambiar directorio
Salir

4. Write the name of the group of programs where the **Pixy**® will appear in the start menu. By default, the name will be **Pixy**® View.

Pixy View - Elegir grupo de programas
El programa de instalación agregará los elementos al grupo mostrado en el cuadro Grupo de programa. Puede escribir un nombre de grupo nuevo o seleccionar uno de la lista Grupos existentes.
Grupo de programas:
Pixy View
Grupos existentes:
Accesorios
Hermes TCR100 v3.21
Inicio
Microsoft Web Publishing
National Instruments
Pixy View
Continuar
Cancelar

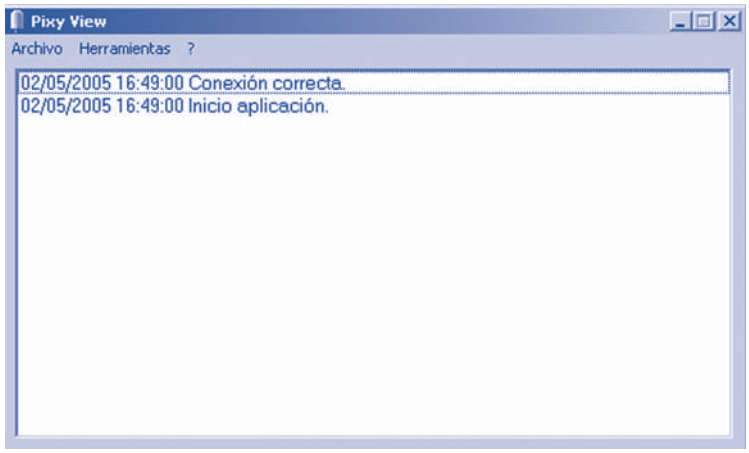
5. Select the folder where the history data files are to be stored and select the serial port that is to be used for the connection.



By default it is stored in C: Programs\Pixy View. The PC COM ports will also appear as well as indicating which are available for use with the **Pixy**® application. Select the desired port by clicking on top of COM.

7.2 Software use

Once the software is installed, we see the following window:



The text box provides real-time information on the status of the application. The following messages may appear:

"Test OK.": You can check that the connection of the **Pixy®** module to the PC is correct by pressing the Test button (Fig, B n_1 5). After pressing this button this message will appear in the text box in the connection test has passed.

"Application initiation.": Records when the application started.

"Proper connection.": No problems in the connection.

"No connection.": A connection could not be established.

"Activated alarm.": Electrical activity danger

"Deactivated alarm.": Disappearance of electrical activity danger.

"Application end.": Marks the quitting of the application.

7.2.1 Program menus

Once the program is launched, 3 different menus are shown:

File: This menu is used to open previously saved files for consultation and to quit the program.

Tools: This menu permits the configuration of the directory where the history logs are saved and the selection of the COM port which comes from the Pixy® module and goes to the computer. See part 5 of point 7.1

?: This menu displays a brief description of the software, such as the version and origin (help.)

8. Troubleshooting

Shown below is a table of common errors, their symptoms and possible solutions. For more information do not hesitate is contacting your distributor.

Symptoms	Possible causes	Solutions
The Operations LED doesn't blink or remains permanently lit.	Defective power	Check the power cable. Check that the adapter functions correctly.
Can not hear the signal.	Audio signal deactivated	Place the audio switch to ON. (Fig B n°14)
The relay outputs did not activate.	Broken relay Bad contacts	Do no apply power superior to 5A nor voltages to 250V. Check the cable connections. Verify power to actuators.
Undesired detections.	Electromagnetic disturbances Cable in bad condition	Move the antenna away from electromagnetic interference. Check the condition of the antenna cable.
Absence of detections.	Capture device in bad condition Cable in bad condition	Check that the capture device is in good condition. Check the condition of the antenna cable.

9. Technical characteristics

ANTENNA

CHARACTERÍSTICS	
Height	34 cm
Diameter	19,2 cm
Weight	1570 g.
Operational temperature	-30ºC to 60ºC

Pixy® MODULE

CHARACTERISTICS	
Dimensions	25,5 x 12,7 x 3,8 (cm)
Weight	508 g.
Power	12 V cc
Consumption	90 mA - 150 mA
Protection	Transitory surge
Communication	Serial (RS-232, RS-485)
Output relays	Potential-free, 5A max, 250V max
Mount	Wall
Service temperature	-30ºC to 60ºC
Relay 1 activation time	10 seg.
Relay 2 activation time	End of electrical activity
Detection radius	15 km (approx.)
Audio signal time	1 seg.
Previstorm® signal	5V max. 20 mA

Dena Desarrollos, S.L.
Duero, 5
08223 Terrassa (Barcelona)
Tel: (+34) 93 736 03 00
Fax (+34) 93 736 03 03
central@ingesco.com
www.ingesco.com

ISO 9001